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ECONOMIC TRENDS

CENSUS OF AGRICULTURE, 1981,

LINKAGE WITH INCOME DATA

1. Introduction

The Census of Agriculture is conducted jointly with the Census of Population each five years. Recently, Statistics Canada released statistical tables which link the income variables from the 1981 Census of Population (20% sample) with the Census of Agriculture itself. These statistics were also linked back to the 1971 Census, adjusted for price changes, and consequently the result is a rich source of information on economic changes affecting farmers.

Some points which might be borne in mind: - firstly the linkage was 99.2 per cent complete, leaving some small discrepancies; secondly the data are based on 20 per cent sampling and are displayed rounded to 0 or 5; thirdly, the linkage is to the farm operator, i.e. the person who is responsible for the day to day decisions on farm operations (one partner is chosen in those cases of partnerships); fourthly the farm land could be owned or rented; fifthly, the farm is defined as a Census farm if it is a farm, ranch or agricultural holding, with agricultural sales of $250 or more. This last definition is critical because it has resulted in the Census including a large number of small operations.

Before moving into detail we can note that the total land area of P.E.I. is about 1,400,000 acres of which a steadily declining percentage is held as farm land. Diagram 1 displays the composition of the Island viewed from the Census of Agriculture perspective, from 1951 to 1981. In 1951 78.3 per cent of the Island was included as farms, and by 1981 it had fallen to 50 per cent. The greatest decline however was

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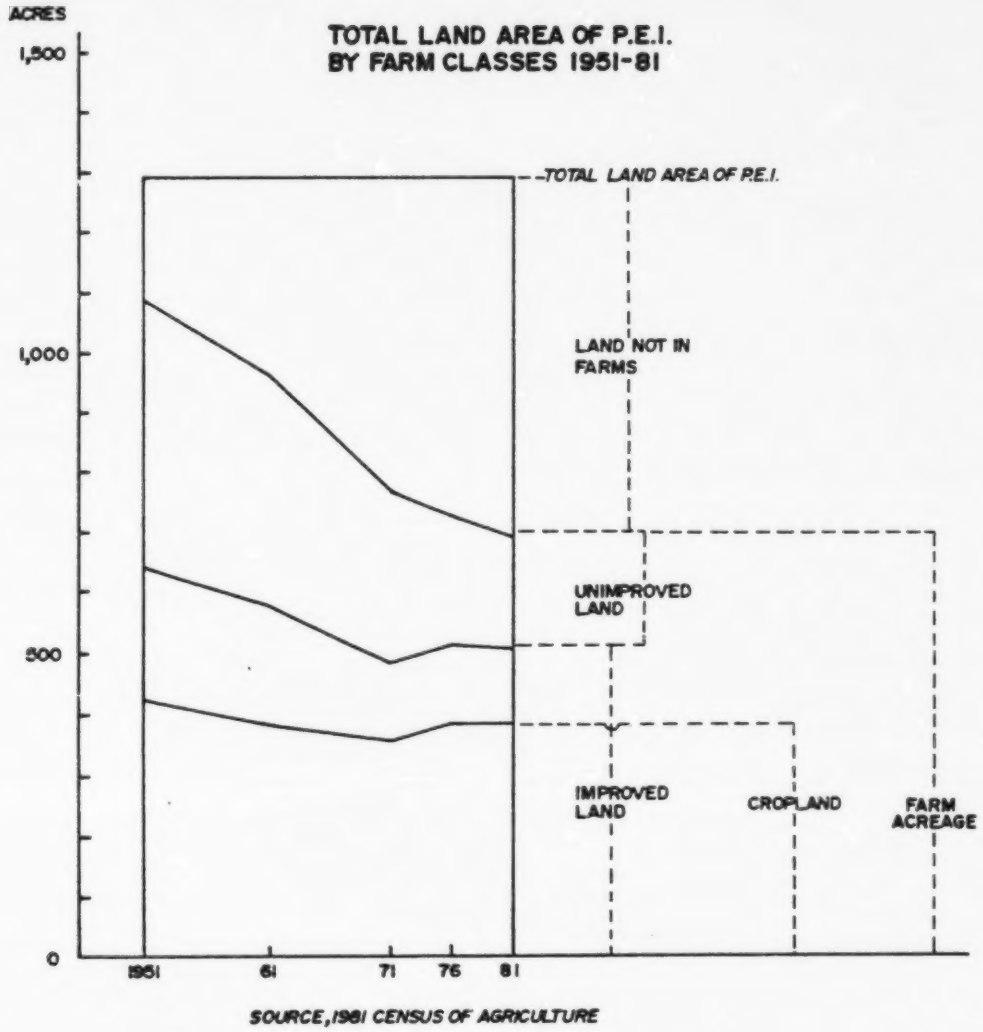
Diagram 1



attributable to the acreage of unimproved land held by farmers, (wood, marsh, etc.) and the total improved land shrank much less, from 646,000 acres in 1951 to 501,000 acres in 1981. The total acreage in crops has remained relatively stable at about 390,000 acres, as most of the shrinkage in improved land was from declining pasture land.

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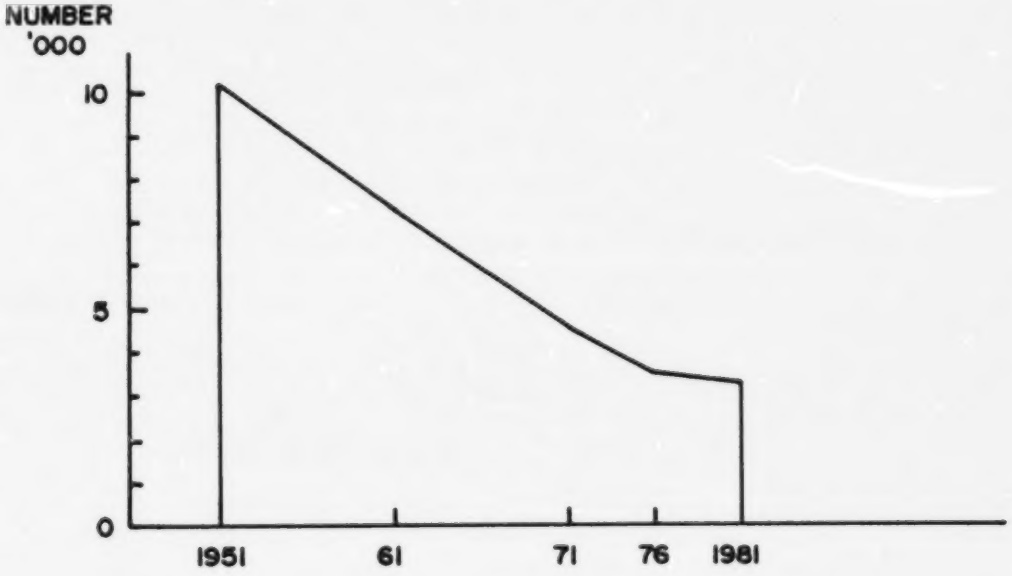
Use of tractors and other farm machinery has had major consequences for farming on P.E.I. Most significantly it has brought about a major shift to larger farm operations and a decline in numbers of farms. Diagram 2 displays the number of Census farms on P.E.I. 1951-1981, which declined to 3,154 from over 10,137 during this thirty year period. As we will see later in this paper the actual number of farm operations

Diagram 2

NUMBER OF CENSUS FARMS
1951 - 1981



SOURCE, 1981 CENSUS OF AGRICULTURE

either supporting individuals or family incomes in a significant way, and contributing to the overall level of agricultural production in 1981 is far less than even this, in view of the definition of a farm used in the Census.

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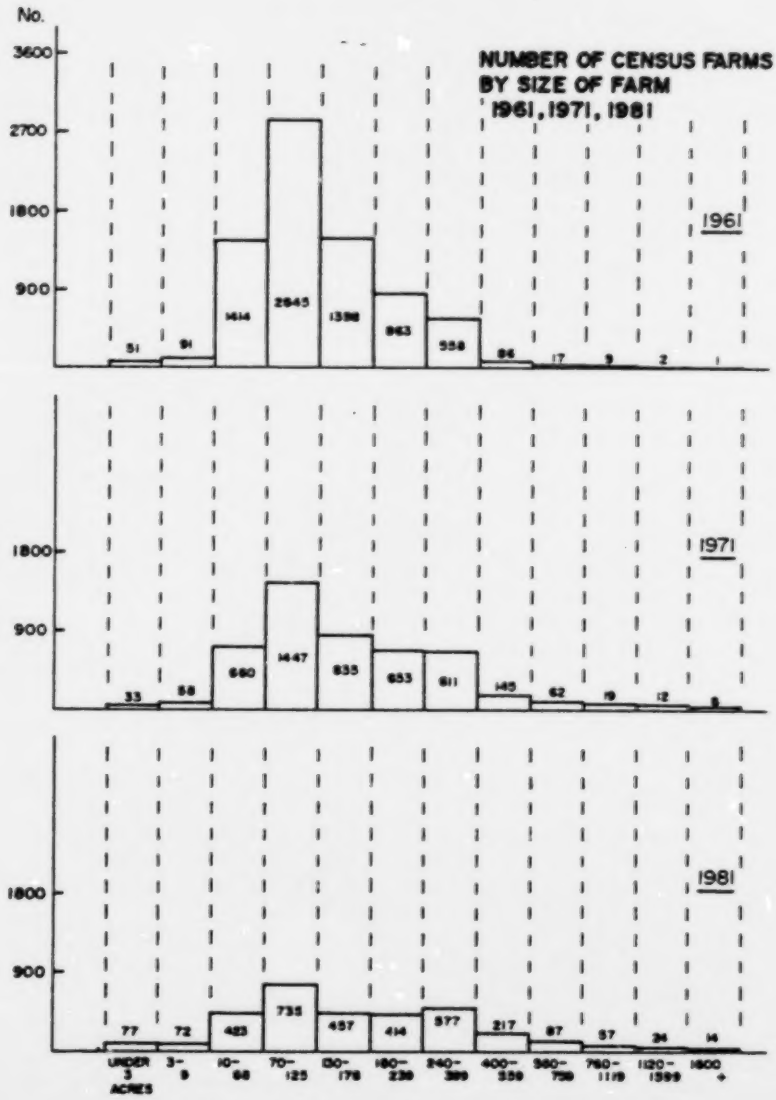
The movement of farming on P.E.I. away from a general family, rural lifestyle to a concentration on a small number of large units has of course had major ramifications, which have been commented on in several previous Economic Trends publications.

2. The Movement to Larger Farms

The movement to larger farms is apparent both in the value of agricultural sales per farm and the acreage of farm land held. In terms of the numbers of farms, by acreage farmed, one can identify in Diagram 3 the pattern that developed 1961-1981. One can see that the number of farms of 10-239 acres

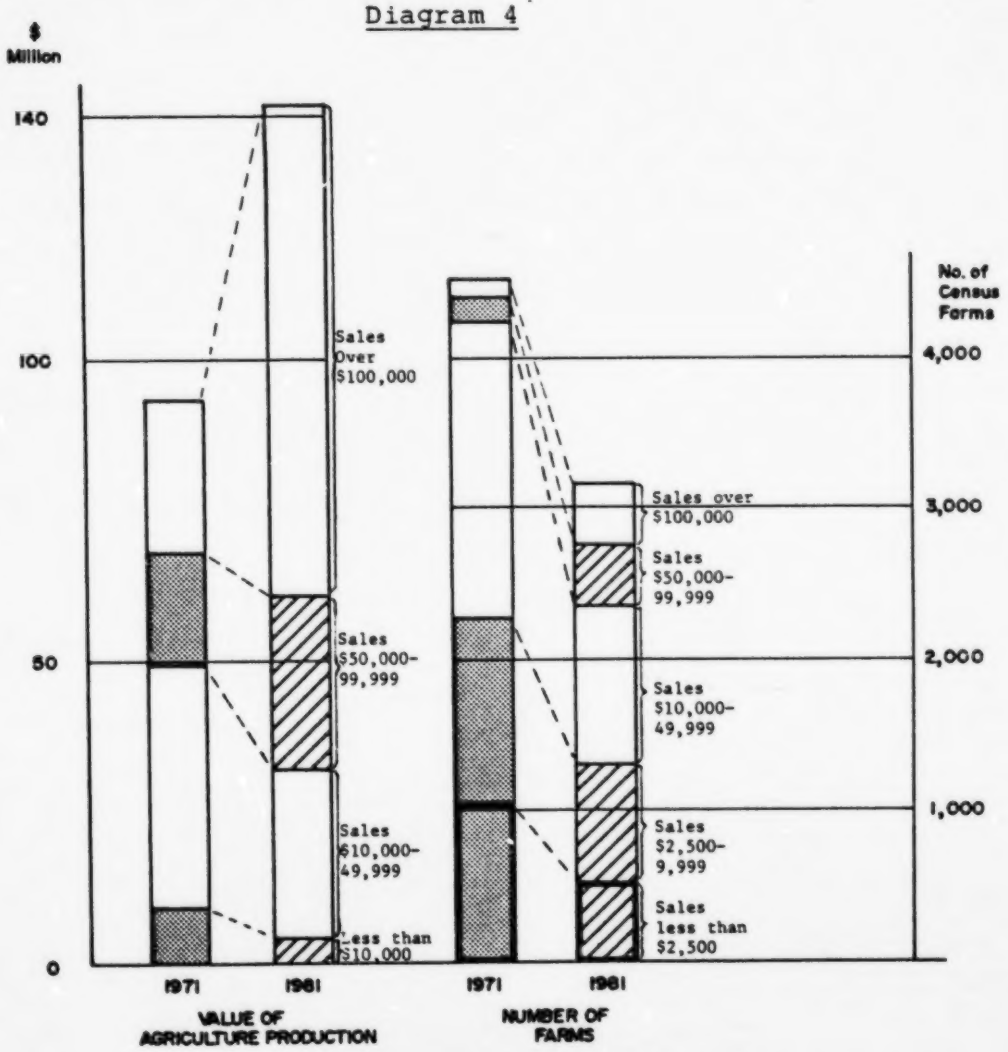
Diagram 3



declined precipitously, from 6,520 in 1961, to 2,029 by 1981. By contrast, farms of over 400 acres increased from 115 to 399, while the number in the 240-399 acres category remained relatively steady.

The underlying influence on this development has been the commercialization of agriculture on P.E.I. and this shows up clearly in the trends in farms classified by agricultural sales (in constant 1981 $). Diagram 4 combines the numbers of farms, by agricultural sales, and the total value of sales in millions

Diagram 4



NUMBER OF FARMS, BY SALES CLASS AND VALUE OF PRODUCTION BY SALES CLASS 1971, 1981, P.E.I.

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of dollars (constant), by farm size, for 1971 and 1981. Total farm output valued $93 million in 1971 and one can see in Diagram 4 how this was subdivided into production of farms with sales less than $10,000, $10,000 to $49,999, $50,000 to $99,999 and $100,000 and over. This can be linked to the 4,530 farms in 1971 grouped in the same way. By 1981 agricultural production valued $141 million, of which $82.7 million was produced by the 395 farms with sales of $100,000 or more, and $28.2 million by the 400 with production $50,000-$99,999. These 795 farmers produced 79% of the total value of agricultural production in 1981. The total number of farms with sales of $50,000 or over increased from 415 in 1971 to 795 in 1981. The value of agricultural production of the other farmers shrank, as did the number of these operations with less than $50,000 sales, from nearly $50 million in 1971 to $32 million in 1981, and the number of such operations declined from 4,120 in 1971 to 2,360 in 1981. Clearly, the expansion of agricultural production on P.E.I. in the 70's is largely found in the expanded number of operations of $100,000 or more, and to a lesser degree an expansion in numbers with sales of $50,000-$99,999.

By contrast, operations with sales of less than $10,000, which numbered 2,310 in 1971, falling to 1,310 by 1981, contributed to less than $4 million of total farm sales in 1981, or about 3.5 per cent of the total value of agricultural production.

Furthermore, the concentration of production into large operations goes somewhat further than these general statistics might imply. The average value of farm sales of the 395 farms with sales of over $100,000 was $209,300 in 1981. Eighty two of these farms had sales of over $250,000. Thirty eight farms were over 1,120 acres in size in 1981, contrasted with 28 in 1971.

The relationship of farm size in terms of acreage, with their value of sales can be discerned from Table 1, also indicating the proportion of the total farm land held.

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TABLE 1

CENSUS FARMS, BY ACREAGE AND SALES CLASS

Farm Class by Sales	Number of Farms	Average Size, Acres	Total Acreage	% of Total Farm Acreage
Over $250,000	82	1,068	87,590	12.5
$100 - 249,999	299	454	135,866	19.4
$ 50 - 99,999	414	293	121,233	17.3
$ 25 - 49,999	473	228	107,855	15.4
$ 10 - 24,999	569	170	96,447	13.8
$ 5 - 9,999	386	145	56,052	8.0
$2,5 - 4,999	362	120	43,654	6.2
Under $2,500	569	89	50,670	7.2
Total	3,154	222	699,367	100.0

Table 1 indicates that large sales are related to larger acreages, yet this relationship is clearly not proportional. The 795 in the "over $50,000" groups occupy 49.2 per cent of all farm land, but they produce 79 per cent of all produce. Conversely, over 50 per cent of all farm land produces about 20 per cent of all produce. The evidence in the 1981 Census is that the larger farm units achieve both higher sales per acre farmed, and higher sales per unit of capital invested, as Table 2 demonstrates.

TABLE 2

SALES PER ACRE OF IMPROVED LAND, AND

CAPITAL INVESTED PER DOLLAR OF SALES

Farm Size	Sales per Acre $	Capital Value per $ Sales
		$
Less than $10,000	56.3	23.8
$10,000 - 49,999	191.7	6.8
$50,000 - 99,999	307.5	4.7
$100,000+	448.2	3.2
Total Average	279.9	5.0

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One must bear in mind that there were 1,317 farms in the less than $10,000 category in 1981, or 41.5 per cent of the total farms. Their agricultural sales per acre, at $56.3 was 12.6 per cent of the "over $100,000" farmers. Their use of capital was very high in relationship to sales, compared to the larger operations. Clearly the movement to larger farming operations in the 70's and the closure of smaller farms is related to these factors.

Yet average figures can be misleading. Small acreages do not necessarily equate with low sales. In fact there are a wide range of sizes of farms, but as Table 3 will show, the trend is more toward farms with at least $50,000 of sales. For example, there was considerable expansion in numbers of

TABLE 3

ACRES OF IMPROVED LAND 1971 and 1981

Value of Sales		Less than 70 acres		70 - 179 acres		180 - 559 acres		560 acres and more		Total	
Less than $2,500	1971	820	1971	185	1971	0	1971	0	1971	1,010
	1981	395	1981	145	1981	0	1981	0	1981	540
$2,500 - $9,999	1971	690	1971	600	1971	15	1971	0	1971	1,305
	1981	310	1981	435	1981	30	1981	0	1981	770
$10,000 - $49,999	1971	260	1971	1,280	1971	260	1971	0	1971	1,810
	1981	160	1981	675	1981	215	1981	0	1981	1,050
$50,000 -	1971	25	1971	75	1971	180	1971	5	1971	280
	1981	25	1981	140	1981	230	1981	0	1981	400
$100,000 +	1971	15	1971	5	1971	75	1971	35	1971	135
	1981	15	1981	55	1981	230	1981	95	1981	395
Total	1971	1,810	1971	2,140	1971	535	1971	45	1971	4,530
	1981	915	1981	1,445	1981	700	1981	90	1981	3,155

Number of farm operations by Value of Sales and Acres of Improved Land.

relatively small farms with 70-179 improved acres in the $50,000 plus categories, from 80 to 195 farms 1971-1981. Clearly the decline in number of farms 1971-1981 was closely related to their value of sales, rather than simply size in terms of acreages.

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3. Farm Organizations

There is continuing concern over the decline of the family farm on P.E.I. and this is closely related to the trends noted above. Table 4 describes the type of organization of farms with over $50,000 sales, relative to the total.

TABLE 4

TYPE OF FARM ORGANIZATION, P.E.I. 1981,

BY SALES CLASS

	Over $250,000	$100,000 $249,999	$50,000 $99,999	Less than $50,000	Total
Family/Individual	25	157	303	2,154	2,639
Partnership					
Written Agree't	9	61	52	46	168
No Written Agree't	6	34	44	127	211
Company					
Family	39	43	14	23	119
Other	3	1	1	1	6
Other	-	3	-	8	11
	82	299	414	2,359	3,154

One can see that as the size of operations enlargens so there is increased use of partnerships and family companies. The number of non-family companies is very limited, at six, which represents a decline from 11 in 1971.

4. Farm Incomes

The statistics on farm incomes are derived from the income statements in the Census of Population as explained earlier. The data distinguish between individuals who reported zero or negative farm income, and those with positive farm income. Summarizing these data in Table 5, one can observe that a large proportion of farm operators reported zero or negative farm incomes both in 1971 and 1981.

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TABLE 5

INCOME STATUS OF FARM OPERATORS,

BY SALES CLASS, 1971 and 1981

Sales	Farm Losses		Zero Farm Income		Positive Farm Inc.		Total	
	1971	1981	1971	1981	1971	1981	1971	1981
Less than $5,000	165	165	590	350	825	400	1,580	915
$5-9,999	65	55	150	90	510	250	725	395
$10-49,999	160	85	295	180	1,355	780	1,810	1,045
$50,000+	25	85	90	120	300	595	415	800
Total	415	390	1,125	740	2,995	2,025	4,535	3,155

12.4 per cent of all farm operators reported negative farm income in 1981, and 23.5 per cent reported zero farm income. The proportions in these categories are clearly related to size of farm sales. Of the 915 operators reporting sales of less than $5,000 only 400, or 44 per cent reported positive income from farming. While this proportion falls significantly at higher levels of farm sales, even within the growing $50,000+ group 15 per cent reported zero farm income, and 10.6 per cent negative farm income.

TABLE 6

PROPORTIONS OF OPERATORS REPORTING

NEGATIVE OR ZERO FARM INCOMES

BY SALES CLASS., 1981

Sales		Actual Numbers Reporting
Less than $2,500	60.2%	325
$2,500 - 9,999	44.2%	340
$10,000 - 49,999	25.7%	270
$50,000 - 99,999	27.5%	110
$100,000+	22.8%	90
Total	36.0%	1,135

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Table 6 provides more detail on this aspect of farm incomes in 1981. One can observe that 60.2 per cent of all farm operators with sales less than $2,500 reported zero or negative incomes. It appears that farms with sales less than $10,000 have a high probability of showing no return in any given year. While the proportion decreases with larger operations, even 22.8 per cent of the $100,000+ group showed zero or negative net farm income.

The Census indicates that only 48.3 per cent of the farm operators on P.E.I., numbering 1,525, have farming as their major income source. Again, the proportions vary drastically depending on size of operation. Table 7 displays the numbers of operators by major source of income, by Sales Group, 1971 and 1981. Of the 1,310 farms with less than $10,000 sales in 1981 only 23.3 per cent reported farming as their major income source. The data indicate that the majority of farms with sales less than $10,000 are likely adjuncts to other activities.

TABLE 7

MAJOR SOURCE OF INCOME, BY SALES CLASS, FARM OPERATORS

	Non Farm Employment		Other Income		Net Farm Income		Total	
Agric. Sales	1971	1981	1971	1981	1971	1981	1971	1981
Less than $10,000	1,130	570	425	430	740	305	2,310	1,310
%	48.9	43.5	18.4	32.8	32.0	23.3	100.0	100.0
$10,000 - 49,999	450	280	180	135	1,175	630	1,805	1,050
%	24.9	26.7	10.0	12.9	65.1	60.0	100.0	100.0
$50,000 - 99,999	55	60	10	45	210	295	280	400
%	19.6	15.0	3.6	11.3	75.0	73.8	100.0	100.0
$100,000+	40	60	5	35	80	300	135	395
%	29.6	15.2	3.7	8.9	59.3	75.9	100.0	100.0
Total	1,680	970	620	645	2,215	1,525	4,530	3,155
%	37.1	30.7	13.7	20.4	48.9	48.3	100.0	100.0

If one raises the limit from 50 per cent to 75-100 per cent of all income from farming, one reduces the overall number to 1,150 or from 48.3 per cent to 36.5 per cent of all farm operators as shown in Table 8, and the proportion of farms

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TABLE 8

NUMBER OF FARM OPERATORS REPORTING FARM INCOME

AS REPRESENTING 75-100% TOTAL INCOME, 1971, 1981

Farm Sales	1971	1981
Less than $10,000	480	180
$10-49,999	905	490
49 - 99,999	180	215
$100,000+	65	265
	1,630	1,150

with sales less than $10,000 falls drastically, to 13.7 per cent of all such operations.

Thus the number of cases of small farms with high dependence on farming is very small and the more usual case would show that farm operators with low farm incomes and low sales generally rely on farming as a minor contribution to the operator's total income.

This is demonstrated in Table 9, showing the average farm income and average total income of farm operators, by size of operations. (These data exclude the numbers with negative

TABLE 9

AVERAGE INCOME OF FARM OPERATORS, WITH POSITIVE

NET FARM INCOME, BY SALES CLASS, 1981

	Sales Class					
	Less than $2,500	2,500-9,999	10,000-49,999	50,000-99,999	$100,000 and above	Total
Number with Positive Farm Income	215	430	780	290	305	2,020
Average Farm Income	$2,544	$4,562	$10,405	$11,811	$24,099	$10,588
Average Total Income	$10,462	$10,425	$13,841	$15,601	$25,644	$14,079

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or zero farm income; the average total income of farm operators with negative farm income was $9,890 incidentally, and $12,539 for those with zero farm income). One can see that the average income of the 2,020 farm operators with positive farm income was $14,079 in 1981, which might be compared with average male income for all males 15 years and over in P.E.I. in 1981 of $11,962. Average farm income per operator in this group was $10,588. Thus, on average, farm operators earned somewhat more than the population generally, although farm income itself was not necessarily the relevant factor.

Again, averages can be misleading. If one regroups the 2,020 farm operators with positive farm income by level of farm income one finds a different picture again, as shown in Table 10.

TABLE 10

FARM INCOME 1981, BY FARM INCOME SIZE

WHERE POSITIVE

Farm Income	Less than $5,000	$5,000-$9,999	$10,000-$19,999	$20,000+	Totals
Numbers	920	440	405	265	2,020
Ave. total Income where positive	$8,450	$10,460	$17,028	$43,773	15,184
Ave. Farm Income	$2,089	$ 6,904	$13,712	$41,624	10,588

Thus one find that about 45 per cent of the 2,020 farmers with positive farm income had net farm income less than $5,000, averaging only $2,089. At the other extreme there were 265 farmers whose income from farming averaged $41,624 in 1981. Clearly the income data show that farm operators on P.E.I. have a large range of income situations, and that the large number of operators with sales less than $10,000 generally depend on other activities for their principal source of income.

We can relate the size of farm to income of operators in Table 11.

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TABLE 11

TOTAL INCOME, FARM OPERATORS, BY SALES CLASS.

Total Income	Sales Class. Less than $10,000	$10,000- $49,999	$50,000- $99,999	$100,000 +	Total
Less than $5,000					
Number	380	190	25	65	660
Ave. Farm Sales	$3,522	$23,610	$73,457	$242,227	
$5 - 9,999					
Number	415	310	90	45	850
Ave. Farm Sales	$3,932	$23,767	$71,779	$179,295	
$10 - 24,999					
Number	410	400	195	145	1,145
Ave. Farm Sales	$3,682	$26,105	$67,100	$220,009	
$25,000 +					
Number	65	125	50	120	360
Ave. Farm Sales	$3,490	$32,725	$80,168	$200,374	
Total	1,310	1,050	400	395	3,155
	$3,774	$25,878	$70,427	$209,301	

This information mixes farm incomes with income from other sources and indicates that low incomes can occur even with farm operations of a significant size, and conversely relatively high incomes can occur with low sales, given the availability of other sources of income. The picture changes if we only look at those who depend on farm income for 75-100 per cent of their total income, as in Table 12.

TABLE 12

INCOME OF OPERATORS DEPENDING 75-100 PER CENT ON FARM INCOME

Total Income	Sales Class. Less than $10,000	$10,000- $49,999	$50,000- $99,999	$100,000 +	Total
Less than $5,000	110	90	10	40	250
$5-9,999	45	145	65	30	280
$10-24,999	20	180	125	105	425
$25,000+	5	75	15	90	190
Total	180	490	215	265	1,145

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Comparing the two Tables one finds, at the low income end, that of the 1,510 farm operators on P.E.I. who earned less than $10,000 in total income in 1981, 530 of them were depending on farming for 75-100 per cent of their income. The majority of these farmers had operations with sales less than $50,000. Of the 1,505 with total income over $10,000, 615 depended upon farming for 75-100 per cent of their income. Clearly the bulk of operators who depended upon farming, earned less than $25,000, notwithstanding the size of their sales.

The Census data also permit us to relate farm incomes by size of farms in terms of acres, cross classified by value of sales. Table 13 shows that of the operators with less than 70 acres of improved land 55.2 per cent had negative or zero farm income. Average farm income of very small amounts,

TABLE 13

AVE. FARM INCOME, WHERE POSITIVE, AND PERCENTAGE WITH ZERO OR NEGATIVE FARM INCOME, BY SALES CLASS AND ACREAGE, 1981

Sales	Less than 70 acres	70-179	180-559	560 +	Total
Less than $2,500	64.6% $2,726	44.8% $2,219	0 -	0 -	60.2% $2,544
$2,500-9,999	54.8% $2,752	39.1% $2,712	- -	0 0	44.2% $4,562
$10,000-49,999	34.4% $6,939	23.0% $10,105	25.6% $13,655	0 0	25.7% $10,405
$50,000-99,999	-- $11,914	21.4% $12,695	26.1% $11,228	0 0	27.5% $11,811
$100,000 +	-- $14,440	-- $20,156	19.6% $17,253	-- $50,196	22.8% $24,099
Total	55.2% $4,505	29.8% $8,257	22.9% $15,128	-- $50,196	36.0% $10,588

in the order of $2,200-$2,700 is predominant in operations of less than 179 acres with sales of less than $10,000. The likelihood of zero to no farm incomes is 64.6 per cent among

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the less than 70 acres class with sales less than $2,500. By contrast, when we look at farms with over 560 acres of improved land, the average farm income of those with positive farm income was $50,196. (There were 60 in this category). The likelihood of finding operators with zero or negative farm income clearly declines as the farms become larger and sales increase, but even the higher ranges show 19.6 per cent with zero or negative farm income.

5. Summary and Conclusions

The development of Prince Edward Island has been dominated by changes in the farming community. The declining number of farms, the reduced agricultural labour force and consolidation into larger units has eroded the traditional life style of the Island. The information presented in this paper can be viewed from many perspectives but it is clear that production gains in the 70's were dominated by farm holdings with sales of over $50,000, and more particularly sales over $100,000. Thus approximately 800 farm operators produced about 80 per cent of P.E.I. farm production in 1981.

There is a wide range of income situations for farm operators, but very few make very high incomes from farming. Only 265 of all operators earned over $20,000 from farming and 405 $10-19,999. 920 earned less than $5,000 and 1,155 reported zero or negative farm income. By far the majority of small farm operators earn more in other occupations than farming. More particularly average farm sales for 1,310 farm operators measures only $3,774 and their total income circumstances varies widely, depending upon non-farm activities.

1,525 farm operators indicate that farm income was their primary source of income, 1,145 that farm income forms 75-100 per cent of their income. Only 615 of that group show total income over $10,000, and only 480 of them farm sales over $50,000. This indicates that the number of individuals depending on farming for over 75 per cent of their income, with sizeable sales and reasonable incomes is very small.

It should not be surprising in light of the above, to find that the number of families depending on farm income has also become very small. Of the 30,290 families on P.E.I. in 1981, only 2,820 included a farm operator. Average family income on P.E.I. that year was $20,666, while that of the 2,820 was $21,593, somewhat higher than the average. Paralleling the previous discussion, approximately 1,000 families reported zero or negative farm income, and of the 1,815 remaining, only 825 indicated farming as contributing over 50 per cent of the family income, and only 475 showed farming as 75-100 per cent their income.

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As Table 14 indicates, about half of all the families with farm operators had total income of $10-24,999, averaging $16,360. The importance of farming to those families can be seen in this Table where one finds that only 200 of these families depended

TABLE 14

FAMILY INCOME OF FARM OPERATORS

Total Family Income	With Any Income		With 75-100% Dependence on Farm Income	
	No.	Av. Income	No.	Ave Income
Less than $5,000	75	$3,197	20	$3,053
$5-9,999	485	$8,056	90	$7,926
$10-24,999	1,375	$16,360	200	$16,399
$25,000+	835	$41,822	170	$55,124
	2,800		475	

on farming for 75-100 per cent of their income. Of those who were doing well, with over $25,000 family income in 1981, 170 relied 75-100 per cent on farming and their average family income was $55,124. Clearly farming is able to support a modest number of farm families at substantial income levels by comparison with the average incomes of Islanders generally.

In conclusion, the major shrinkage in number of farms over the years appears as only the tip of the iceberg in terms of declining dependence of individuals and families on farming as a primary occupation. Farms with sales of $50,000 and more, particularly $100,000 or more, are expanding while the rest are shrinking in numbers. The economic circumstances of the majority of farm operators is determined by earnings outside agriculture, and in view of the concentration of farming into fewer holdings, the number of families living off farming today at reasonable incomes has become correspondingly small; only 370 families who relied 75-100 per cent on farming had total income over $10,000.

In terms of the general economics of the situation, there appears to be a direct relationship between the size of operation in terms of value of sales and return per unit of capital invested, and per acre farmed. Put another way, a lot of small operators show very small sales in relationship to their land holdings and ownership of capital. Thus increased farm production in the future will likely see further consolidation into larger, more efficient commercial operations as it has in the past.